

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1, 5, 7-13, 15-21, and 23 are pending in the present application, Claims 8 and 16 having been amended. Applicants respectfully submit that no new matter is added.

In the outstanding Office Action, Claims 1, 5, 7-9, 15-17, and 23 were rejected under 35 U.S.C. §102(b) as anticipated by Surampudi et al. (U.S. Patent No. 6,303,244, hereinafter Surampudi); Claims 11-13 and 19-21 were rejected under 35 U.S.C. §103(a) as unpatentable over Surampudi in view in view of Von Andrian (U.S. Patent No. 6,977,118); and Claims 10 and 18 were rejected under 35 U.S.C. §103(a) as unpatentable over Surampudi in view of Tskuki et al. (U.S. Patent No. 4,629,664, hereinafter Tskuki).

Applicants thank the Examiner for the courtesy of an interview extended to Applicants' representative on August 22, 2007. During the interview, differences between the present invention and the applied art, and the rejections noted in the outstanding Office Action were discussed. No agreement was reached pending the Examiner's further review when a response is filed. Arguments presented during the interview are reiterated below.

In the present amendment, Claims 8 and 16 are amended to commonly introduce a limitation of "in the mixing container" with respect to the liquid mixture which is subject to heat exchange. Support of the amendments to Claims 8 and 16 is found, for example, on page 11, lines 4-12 and page 13, lines 6-17. Therefore, no new matter is added.

With respect to the rejection of Claim 1 as anticipated by Surampudi, Applicants respectfully traverse this ground of rejection. Claim 1 recites "a heat exchanger exchanging heat between the liquid fuel supplied by the fuel supply unit to the anode and an exhaust exhausted from the liquid fuel cell, wherein the exhaust is exhausted from the anode or both the cathode and the anode"

As already explained in the previous filed responses, at least two working fluids are required to make a heat exchanger function. The aforementioned element of Claim 1 clearly recites that the two working fluids are the liquid fuel supplied by the fuel supply unit to the anode and the exhaust exhausted from the liquid fuel cell. Further, the recitation in the wherein-clause limits the exhaust used in the heat exchanger to those from the anode or both the cathode and the anode.

The outstanding Office Action noted that carbon dioxide produced by the electrochemical reaction when the water and fuel mixture circulates past the anode is withdrawn along with the fuel and water solution through the outlet 23 and that the heat exchanger receives the output from the anode outlet in Surampudi's device. However, such a description merely means that the output from the anode outlet (exhaust including fuel and water) is one of the working fluids of the heat exchanger 37. As argued above, a heat exchanger requires two distinctive working fluids.

Surampudi does not explicitly disclose the second working fluid in the heat exchanger 37. As shown in Fig. 2 of Surampudi, there is only one input into the heat exchanger. In general, without any explicit teaching, a person of ordinary skill in the art may consider that the exhaust exchanges heat with ambient air in heat exchanger 37.

More specifically, the disclosure of Surampudi can be interpreted as describing that the heat exchanger 37 exchanges heat between ambient air and the exhaust (maybe including fuel and water) exhausted from the liquid fuel cell. This does not meet the aforementioned limitation of Claim 1. Claim 1 recites the heat exchanger exchanges heat between the liquid fuel supplied by the fuel supply unit to the anode and an exhaust exhausted from the liquid fuel cell.

Furthermore, even if the exhaust includes fuel and water, Surampudi does not disclose or suggest that heat is exchanged between the fuel and water. Since the fuel and water are

components of the exhaust, it does not make sense that the heat exchanger of Surampudi exchanges heat between the water and the fuel in the exhaust. It does not make sense that the heat exchanger 37 transfers heat between the water and fuel (which are the components of the exhaust) because no net heat would be transferred from the exhaust. Rather, the exhaust would continue to contain the same amount of heat, which would defeat the purpose of a heat exchanger.

Furthermore, as discussed during the interview, MPEP §2173.05(g) states “A functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used.”

As already discussed in the previous responses, Von Andrian and Tsuki fail to cure the deficiencies in Surampudi.

For at least the foregoing reasons, the Applicants respectfully submit that Claim 1 (and any claims dependent thereon) patentably distinguishes over Surampudi, Von Andrian, and Tskuki, taken alone or in proper combination.

With respect to the rejection of Claim 8 as anticipated by Surampudi, Applicants respectfully submit that the amendment to Claim 8 overcomes this ground of rejection. Amended Claim 8 recites, *inter alia*, “a heat exchanger connected to the mixing container so as to exchange heat between ambient air and the liquid mixture in the mixing container.” Surampudi does not disclose or suggest this element of amended Claim 8.

The heat exchanger 37 of Surampudi is not “a heat exchanger connected to the mixing container so as to exchange heat between ambient air and the liquid mixture in the mixing container.” The heat exchanger 37 of Surampudi receives the output from the anode outlet port 23 of the stack 25 and may use it as one of the working fluids in heat exchanger 37. As noted above, the other working fluid may be the ambient air. Therefore, the heat exchanger

37 may exchange heat between ambient air and the output from the anode outlet port 23 of the stack 25 (which may include unreacted fuel and air), and not the mixture in the mixing container.

For at least the foregoing reason, Surampudi fails to disclose or suggest the claimed "a heat exchanger connected to the mixing container so as to exchange heat between ambient air and the liquid mixture in the mixing container."

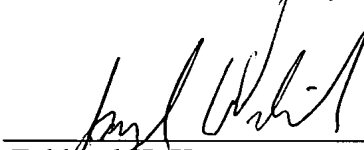
Von Andrian and Tsuki fail to cure the deficiency in Surampudi.

In view of the above-noted distinctions, Applicants respectfully submit that Claim 8 (and any claims dependent thereon) patentably distinguishes over Surampudi, Von Andrian, and Tskuki, taken alone or in proper combination. Claim 16 recites elements analogous to those of Claim 8. Thus, Applicants respectfully submit that amended Claim 16 patentably distinguishes over Surampudi, Von Andrian, and Tskuki, taken alone or in proper combination, for at least the reasons stated for Claim 8.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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